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TC 2000 MAIL ROOM Attorney Docket No. ERLG.P-027

May 31, 2001

PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Mullins, et al.  
Serial No.: 09/681,706 *686*  
Filing Date: 05/23/2001  
Title: A Protocol for a Power Supply Unit Controller

*#5  
Priority  
Paper  
12-18-01  
DC*

SUBMISSION OF PRIORITY DOCUMENTS

Assistant Commissioner for Patents  
U.S. Patent and Trademark Office  
Washington, D.C. 20231

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Sir:

Applicants submit herewith certified copies of Irish Patent Application No. S2000/0712 and Irish Patent Application No. S2000/0547 which are the priority documents cited in this patent application.

Applicants do not believe fees are due with this submission; however, the Commissioner is authorized to debit any fees deemed due from Deposit Account No. 15-0610.

Respectfully submitted,

*Carl Oppedahl*

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I hereby certify that this paper and the attachments named herein are being deposited with the United States Postal Service as first class mail in an envelope addressed to Assistant Commissioner of Patents, U.S. Office of Patents and Trademarks, Washington, D.C. 20231 on May 31, 2001.

*5/31/01*  
Date of Signature

*Linda L. Orr*  
Linda L. Orr



Assistant Commissioner for Patents  
U.S. Patent and Trademark Office  
Washington, D.C. 20231



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I HEREBY CERTIFY that annexed hereto is a true copy of documents filed in connection with the following patent application:

Application No. S2000/0547

Date of Filing 6 July 2000

Applicant RICHMOUNT COMPUTERS LIMITED, an Irish Company of Maple House, South County Business Park, Leopardstown, Dublin 18, Ireland.

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Dated this 16 day of March 2001.

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*Coburn*

PP An officer authorised by the  
Controller of Patents, Designs and Trademarks.

FORM NO. 1

REQUEST FOR THE GRANT OF A PATENT  
PATENTS ACT, 1992

The Applicant named herein hereby request

☐ the grant of a patent under Part II of the Act

☒ the grant of a short-term patent under Part III of the Act

on the basis of the information furnished hereunder.

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1. APPLICANT

Name

RICHMOUNT COMPUTERS LIMITED

Address

Maple House, South County Business Park,  
Leopardstown, Dublin 18, Ireland.

Description/Nationality

An Irish Company

2. TITLE OF INVENTION

"Spring Loaded Electrical Connections for Field Replacable Unit (FRU) or Hot-Swappable Devices"

3. DECLARATION OF PRIORITY ON BASIS OF PREVIOUSLY FILED  
APPLICATION FOR SAME INVENTION (SECTIONS 25 & 26)

Previous filing date

Country in or for  
which filed

Filing No.

4. IDENTIFICATION OF INVENTOR(S)

Name(s) of person(s) believed by Applicant(s) to be the inventor(s)

1.

Address

1.

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5. STATEMENT OF RIGHT TO BE GRANTED A PATENT (SECTION 17(2)(B))

By virtue of

Contd./...

6. **ITEMS ACCOMPANYING THIS REQUEST - TICK AS APPROPRIATE**

- (i) ☒ prescribed filing fee EUR 63.49 (IR£50.00)
- (ii) ☐ specification containing a description and claims  
☒ specification containing a description only  
☒ Drawings referred to in description or claims
- (iii) ☐ An abstract
- (iv) ☐ Copy of previous application(s) whose priority is claimed
- (v) ☐ Translation of previous application whose priority is claimed
- (vi) ☐ Authorisation of Agent (this may be given at 8 below if this Request is signed by the Applicant(s))

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7. **DIVISIONAL APPLICATION**

The following information is applicable to the present application which is made under Section 24

Earlier Application No:  
 Filing Date:

8. **AGENT**

The following is authorised to act as agent in all proceedings connected with the obtaining of a Patent to which this request relates and in relation to any patent granted -

**Name**  
 F. R. KELLY & CO.

**Address**  
 at their address as recorded for the time being in the  
 Register of Patent Agents

9. **ADDRESS FOR SERVICE (IF DIFFERENT FROM THAT AT 8)**

RICHMOUNT COMPUTERS LIMITED  
 F. R. KELLY & CO.

By:

  
 EXECUTIVE

Date: July 6, 2000

**What is the problem to be solved by this invention or what is the need for this invention?**

*i.e. Describe the problem and/or explain the need clearly.*

1. Every carrier inserted to a storage system that requires an electrical connection requires a connector on the backplane.
2. If the carrier does not use a connector that is on the backplane, then an extra cost is incurred. If spring loaded pins on the carrier are used along with PADs on the backplane then the cost of the backplane is reduced.
3. Also you eliminate the possibility of a faulty connector. You may have a fault with the spring loaded pins, but if so replace the carrier.

**What are the closest known technologies, products or processes to the invention?**

*i.e. Are there alternative ways of solving the problem?*

1. PCB or wires in carrier with a connector that mates with a connector on the backplane.

**What are the problems with closest known technologies, products or processes?**

*i.e. Why don't they solve the problem, or what are their disadvantages? - e.g. cost, quality, cycle time, repeatability, manufacturability.*

1. Cost of connectors.
2. Extra manufacturing cost of backplane, due to extra components.
3. Cost of PCB or cable for carrier.
4. Possible number of errors due to large number of components : backplane connector, shuttle connector, shuttle PCB, shuttle cables.

**Explain how this invention overcomes these problems:**

*i.e. What are the advantages of this invention compared to known technologies, products or processes?*

1. A double pointed spring loaded pin can make the connection at either end of the carrier.
2. There is no need for connectors, PCB's or cables.

**What are the possible applications for this invention?**

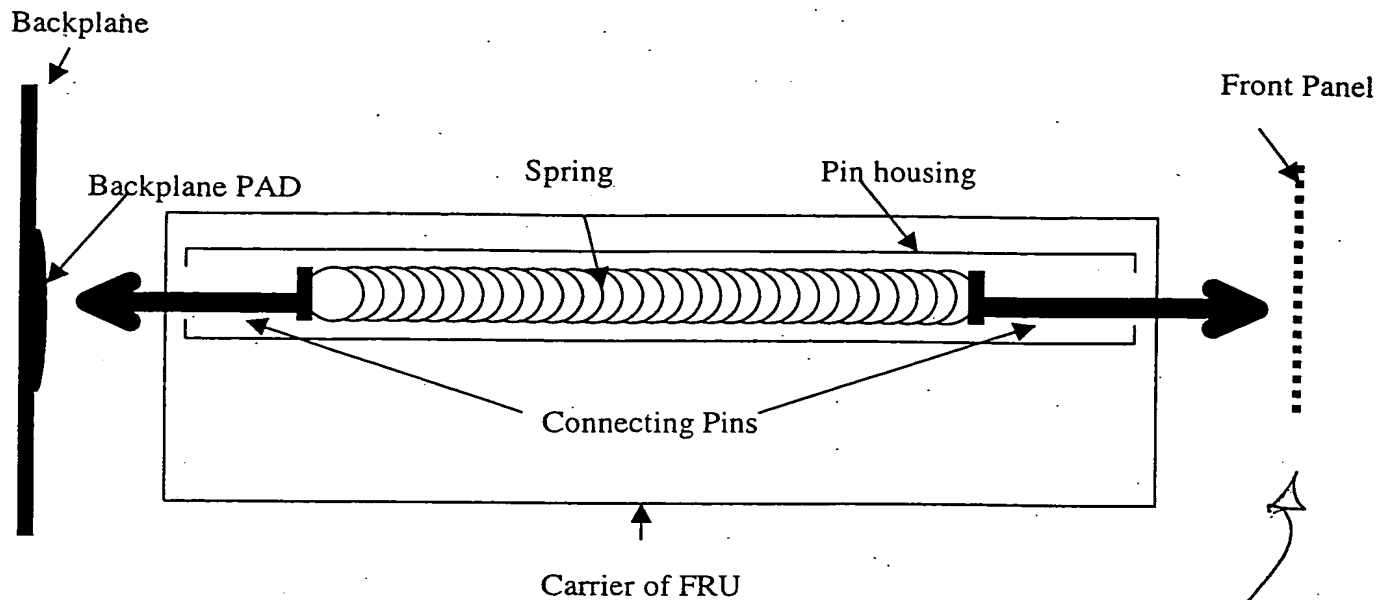
*i.e. List applications, including opportunities for future products.*

This idea could be used to connect any two units together electrically. I see it being used to connect electrical signals in disk drive carriers, ACM units, power supplies, switch modules and any other field replaceable unit a disk storage system.

**What is the perceived commercial value of the invention?**

*i.e. cost savings per unit or increased revenue per annum.*

Easier process for manufacturing with a reduce manufacturing cost due to the reduced number of parts.



**Brief description of the invention (attach labelled drawings, flowcharts or block diagrams):**

*Explain how the idea works describing the basic design concept and materials used.*

The idea involves

1. Connecting removable or hot-swappable devices electrical devices to a backplane
2. All devices that require electrical connection to or from a backplane.
3. PADs only required on backplane (no connectors) to deliver electrical signals to FRUs
4. The connection to the backplane will be through spring loaded pins connecting to a special pad on the backplane PCB, similar to the technology used in smart cards.
5. The spring loaded pins will be inside a carrier that is inserted into the storage system.
  - Then the carrier locks home the pins will meet with the pads on the backplane carrying the appropriate signal.
  - A good connection will be made because the pins are spring loaded.
  - Thus reducing the requirement for a connector on the backplane.
6. The same connection method can also be used for front panels on carriers, thus making them easier to fit and replace.